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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the display which displays arbitrary shape with lighting, and relates to the lighting type display in consideration of the reflecting structure of the illumination light in the indicator lamp with which the combined instrument for cars is equipped in detail.

[0002]

[Description of the Prior Art]Conventionally, the combined instrument of the car is equipped with the lighting-type display for performing the display which should be reported to drivers, such as vehicles and a state of vehicle mounted equipment, for example, an oil pressure indicator, a brake indicator, a door indicator, etc.

[0003]As shown in drawing 3, the front face of the lamp housing 2 in which the conventional lighting type display 1 has the light source seat part 6 is covered with the plotting board 3, and the valve 4 for lighting is formed in the patchboard 5 which forms the back wall of the light source seat part 6. Although the plotting board 3 is a flat translucent board, in order to display warning etc., the non-light transmission portion which made desired shape is formed by printing etc. Therefore, the light 4a emitted from the valve 4 displays \*\*\*\*\* light transmission shape by a non-light transmission portion.

[0004]Here, the light 4a emitted from the valve 4 has what is directly irradiated by the plotting board 3, and a thing which it reflects in the paries medialis orbitae 7 of the light source seat part 6, and is indirectly irradiated by the plotting board 3. Usually, in the center section of the plotting board 3 which is right above [ light source ] only with the light by the valve 4 directly, luminosity will become the highest, and luminosity will become low at the end of the plotting board 3. Therefore, in the lighting type display 1, in order to make luminosity of the plotting board 3 uniform, it has the structure of distributing catoptric light. That is, unevenness is provided in the paries medialis orbitae 7 of the light source seat part 6 by crimp processing etc., and an irregular reflection surface is formed, and it is planned so that catoptric light may be uniformly distributed to the plotting board.

[0005]

[Problem(s) to be Solved by the Invention]By the way, a light emitting diode (LED is called hereafter) is used for the light source of such a display from a viewpoint that power consumption and calorific value can be pressed down low, in many cases. However, since

directivity of LED was strong, catoptric light sufficient by just the scattered reflection of the paries medialis orbitae 7 was not obtained, but the center section and end of the plotting board 3 of equalization of luminosity were insufficient [ LED / there was little light volume which hits the paries medialis orbitae 7 of the light source seat part 6, and ]. Therefore, the light volume irradiated by the light transmission portion of the plotting board 3 was made to produce unevenness, and the shape which should be displayed in the end of the plotting board 3 could not be displayed appropriately, but there was a problem that visibility will fall.

[0006]This invention is made in order to solve the above-mentioned technical problem, and it is a thing.

The purpose is to provide the lighting type display which can make the lighting of a strong directive light source able to equalize, and can raise the visibility of display shape.

[0007]

[Means for Solving the Problem]A lighting type display concerning claim 1 of this invention for attaining the above-mentioned purpose, A lamp housing which an opening is formed in an end and has a light source seat part whose paries medialis orbitae is a reflector of light, A light emitting diode which is the light source for lighting provided in a back wall of said light source seat part, It is the lighting type display provided with the plotting board with which light transmission shape for a front face of said opening being covered and displaying a request was formed, While having a transparent material for fitting in between said light emitting diode in said light source seat part, and said plotting board, forming a contact surface with paries medialis orbitae of said light source seat part, being scattered about and making light which entered into the surface light source, crimp processing is performed to said paries-medialis-orbitae surface.

[0008]According to the lighting type display of the above-mentioned composition, a contact surface with paries medialis orbitae of a light source seat part is formed, and transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Furthermore, crimp processing is performed to the paries-medialis-orbitae surface of a light source seat part. Therefore, while scattering light emitted from LED inside a transparent material, the paries-medialis-orbitae surface can be made to be able to irradiate, and you can carry out scattered reflection, and can make it again scattered about inside a transparent material. Therefore, even if it is a strong directive light source like LED, reflected light quantity sufficient by scattering irradiation light can be obtained, and it can be made to irradiate with light uniformly to the plotting board. Therefore, shape which should be displayed also in an end of the plotting board can be displayed appropriately, and visibility can be raised.

[0009]A lighting type display concerning claim 2 of this invention for attaining the above-mentioned purpose, A lamp housing which an opening is formed in an end and has a light source seat part whose paries medialis orbitae is a reflector of light, A light emitting diode which is the light source for lighting provided in a back wall of said light source seat part, It is the lighting type display provided with the plotting board with which light transmission shape for a front face of said opening being covered and displaying a request was formed, While having a transparent material for fitting in between said light emitting diode in said light source seat part, and said plotting board,

forming a contact surface with paries medialis orbitae of said light source seat part, being scattered about and making light which entered into the surface light source, aluminum vacuum evaporation processing is performed to said paries-medialis-orbitae surface.

[0010]According to the lighting type display of the above-mentioned composition, a contact surface with paries medialis orbitae of a light source seat part is formed, and transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Furthermore, aluminum vacuum evaporation processing is performed to the paries-medialis-orbitae surface of a light source seat part. Therefore, while scattering light emitted from LED inside a transparent material, you can make it able to reflect making the paries-medialis-orbitae surface irradiate and maintaining reflected light quantity, and can make it again scattered about inside a transparent material. Therefore, even if it is a strong directive light source like LED, while scattering irradiation light, reflected light quantity by paries medialis orbitae can be maintained, sufficient reflected light quantity can be obtained, and it can be made to irradiate with light uniformly to the plotting board. Therefore, shape which should be displayed also in an end of the plotting board can be displayed appropriately, and visibility can be raised.

[0011]A lighting type display concerning claim 3 of this invention for attaining the above-mentioned purpose, A lamp housing which an opening is formed in an end and has a light source seat part whose paries medialis orbitae is a reflector of light, A light emitting diode which is the light source for lighting provided in a back wall of said light source seat part, It is the lighting type display provided with the plotting board with which light transmission shape for a front face of said opening being covered and displaying a request was formed, While having a transparent material for fitting in between said light emitting diode in said light source seat part, and said plotting board, forming a contact surface with paries medialis orbitae of said light source seat part, being scattered about and making light which entered into the surface light source, A diffusion board which makes uniform luminosity diffuse light which penetrated this transparent material to the plotting board is allocated between said plotting board and said transparent material.

[0012]According to the lighting type display of the above-mentioned composition, a contact surface with paries medialis orbitae of a light source seat part is formed, and transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Therefore, while scattering light emitted from LED inside a transparent material, the paries-medialis-orbitae surface can be made to be able to irradiate, and you can make it able to reflect, and can make it again scattered about inside a transparent material. While scattering irradiation light even if it is a strong directive light source like LED since a diffusion board which makes uniform luminosity diffuse light which furthermore penetrated a transparent material is allocated between the plotting board and a transparent material, it can be made to irradiate with light uniformly to the plotting board. Therefore, shape which should be displayed also in an end of the plotting board can be displayed appropriately, and visibility can be raised.

[0013]A diffusion board which a lighting type display concerning claim 4 of this invention for attaining the above-mentioned purpose is [ board ] the lighting type display according to claim 1 or 2, and makes uniform luminosity diffuse light which penetrated

said transparent material to the plotting board is allocated between said plotting board and said transparent material.

[0014]According to the lighting type display of the above-mentioned composition, a diffusion board which makes the lighting type display according to claim 1 or 2 diffuse light which penetrated a transparent material in uniform luminosity to the plotting board is allocated between the plotting board and a transparent material. Therefore, even if it is the light which is not reflected by paries medialis orbitae, it can be made to be spread to the plotting board, and light irradiated by the plotting board can be made more into homogeneity, and improvement in further visibility can be aimed at.

[0015]

[Embodiment of the Invention]Hereafter, one embodiment of the lighting type display concerning this invention is described based on drawing 1 and drawing 2. Drawing 1 is drawing of longitudinal section showing one embodiment of the lighting type display of this invention, and a cross-sectional view in a X-X line [ in / in drawing 2 / drawing 1 ].

[0016]As shown in drawing 1 and drawing 2, the front face of the lamp housing 21 in which the lighting type display 20 of this embodiment has the light source seat part 25 is covered with the plotting board 22, and LED23 for lighting is provided in the patchboard 24 which forms the back wall of the light source seat part 25. The light transmission shape for displaying a request on the plotting board 22 is formed, the irradiation light 23a is irradiated from LED23, and warning etc. are displayed.

[0017]The lamp housing 21 is making the shape of a cylindrical shape, and the light source seat part 25 which consists of the patchboard 24 in which the inside is the paries medialis orbitae 26 and a back wall is formed. An opening is carried out, and the paries medialis orbitae 26 has a uniform angle of gradient toward a front opening from an inner, and the front of the light source seat part 25 spreads, and is formed. While the surface of the paries medialis orbitae 26 is a reflector of light, surface roughening is carried out by crimp processing, unevenness is provided, and the irregular reflection surface is formed. LED23 which is the light source for lighting connected to the patchboard 24 is provided in the center of an inner of the light source seat part 25.

[0018]The plotting board 22 is formed so that the opening part ahead of the light source seat part 25 may be covered. Although this plotting board 22 is a flat translucent board, in order to display warning etc., the non-light transmission portion (not shown) which made desired shape is formed by printing etc. Therefore, the irradiation light 23a from LED23 displays by penetrating a \*\*\*\*\* light transmission portion by a non-light transmission portion.

[0019]Between LED23 and the plotting board 22, it has the transparent material 27 which fits in in the light source seat part 25. The upper surface is formed in the truncated cone shape which is the concave curve 27a, and the transparent material 27 fits in from the opening side of the light source seat part 25 so that the concave curve 27a may turn to LED23 side. The concave curve 27a and the bottom 27b of an opposite hand are flat surfaces parallel to the plotting board 22 in the state where it fitted in in the light source seat part 25, and carry out field contact with the plotting board 22 via the diffusion film 28 which will be later mentioned if the lamp housing 21 is equipped with the plotting board 22. The side 27c of the transparent material 27 has the same angle of gradient as the paries medialis orbitae 26 of the light source seat part 25, and carries out field contact with the medial surface 26 by fitting to the light source seat part 25. The paries medialis

orbitae 26 glares, scattered reflection of it is carried out to it by such composition, and the irradiation light 23a from LED23 is again scattered about by transparent material 27 inside by it while it is scattered about in the transparent material 27.

[0020]The portion which faces the light source seat part 25 of the plotting board 22 is equipped with the diffusion film 28 which is an optical diffusion board. The diffusion film 28 diffuses the light which entered by using the reflectance of the particles in a film. Thereby, uniform luminosity can be made to diffuse the light which penetrated the transparent material 27 to the plotting board 22.

[0021]Next, an operation of this embodiment is explained. He follows it to the opening direction of the light source seat part 25, the irradiation light 23a irradiated from LED23 entering into the concave curve 27a of the transparent material 27 first, and being scattered about in the transparent material 27. It is irradiated with a part of irradiation light 23a by the paries medialis orbitae 26 of the light source seat part 25 from the side of the transparent material 27, and scattered reflection is carried out by the paries medialis orbitae 26 which is an irregular reflection surface. These lights by which scattered reflection was carried out are again entered and scattered on the transparent material 27 from the side 27c. such dispersion and scattered reflection -- the bottom 27b of the transparent material 27 -- abbreviated -- it becomes the uniform surface light source.

[0022]From the bottom 27b of the transparent material 27, the irradiation light 23a which penetrated the transparent material 27 is irradiated to the diffusion film 28. It is reflected by the particles in a film and the light 23a which entered into the diffusion film 28 is diffused in uniform luminosity to the plotting board 22. Even if it is the light in which scattered reflection is not carried out by the paries medialis orbitae 26 among the irradiation light 23a, you can make it spread to the plotting board 22 here by penetrating the diffusion film 28.

[0023]Since the light transmission shape for displaying a request on the plotting board 22 is formed, the irradiation light 23a which penetrated the plotting board 22 can recognize the display of \*\*\*\*\*, an alarm, etc. visually in the shape for displaying an alarm etc. The light 23a which penetrated the diffusion film 28 can display appropriately the shape which should be displayed also in the end of the plotting board 22 by operation of dispersion mentioned above, or scattered reflection and diffusion.

[0024]Although crimp processing was performed to the paries medialis orbitae 26 in this embodiment, it is good also considering this as aluminum vacuum evaporation processing. Since the field which performed aluminum vacuum evaporation processing has much reflected light quantity, the light irradiated by the paries medialis orbitae is reflected with the light volume maintained. Therefore, sufficient reflected light quantity by the reflection from the paries medialis orbitae can be obtained, and the shape which should be displayed also in the end of the plotting board can be displayed appropriately.

[0025]

[Effect of the Invention]According to the lighting type display of this invention according to claim 1, as explained above, a contact surface with the paries medialis orbitae of a light source seat part is formed, and the transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Furthermore, crimp processing is performed to the paries-medialis-orbitae surface of a light source seat part. Therefore, while scattering the light emitted from LED inside a transparent material, the paries-medialis-orbitae surface can

be made to be able to irradiate, and you can carry out scattered reflection, and can make it again scattered about inside a transparent material. Therefore, even if it is a strong directive light source like LED, reflected light quantity sufficient by scattering irradiation light can be obtained, and it can be made to irradiate with light uniformly to the plotting board. Therefore, the shape which should be displayed also in the end of the plotting board can be displayed appropriately, and visibility can be raised.

[0026]According to the lighting type display according to claim 2, a contact surface with the paries medialis orbitae of a light source seat part is formed, and the transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Furthermore, aluminum vacuum evaporation processing is performed to the paries-medialis-orbitae surface of a light source seat part. Therefore, while scattering the light emitted from LED inside a transparent material, you can make it able to reflect making the paries-medialis-orbitae surface irradiate and maintaining reflected light quantity, and can make it again scattered about inside a transparent material. Therefore, even if it is a strong directive light source like LED, while scattering irradiation light, the reflected light quantity by the paries medialis orbitae can be maintained, sufficient reflected light quantity can be obtained, and it can be made to irradiate with light uniformly to the plotting board. Therefore, the shape which should be displayed also in the end of the plotting board can be displayed appropriately, and visibility can be raised.

[0027]According to the lighting type display according to claim 3, a contact surface with the paries medialis orbitae of a light source seat part is formed, and the transparent materials which fitted in between a light emitting diode and the plotting board are scattered about, and make light which entered the surface light source. Therefore, while scattering the light emitted from LED inside a transparent material, the paries-medialis-orbitae surface can be made to be able to irradiate, and you can make it able to reflect, and can make it again scattered about inside a transparent material. While scattering irradiation light even if it is a strong directive light source like LED since the diffusion board which makes uniform luminosity diffuse the light which furthermore penetrated the transparent material is allocated between the plotting board and a transparent material, it can be made to irradiate with light uniformly to the plotting board. Therefore, the shape which should be displayed also in the end of the plotting board can be displayed appropriately, and visibility can be raised.

[0028]According to the lighting type display according to claim 4, the diffusion board which makes the lighting type display according to claim 1 or 2 diffuse the light which penetrated the transparent material in uniform luminosity to the plotting board is allocated between the plotting board and a transparent material. Therefore, even if it is the light which is not reflected by the paries medialis orbitae, it can be made to be spread to the plotting board, and light irradiated by the plotting board can be made more into homogeneity, and improvement in the further visibility can be aimed at.

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[Translation done.]